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RYCOM 8840/8850 II

USER'S MANUAL

Model 8840 Path Finder

and

Model 8850 Path Finder II

Cable and Pipe Locator

RYCOM®
instruments, inc.

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USER'S MANUAL ADDENDUM
MODEL 8840/50
CABLE AND PIPE LOCATOR
033 00048 00

CORRECTIONS TO ORIGINAL PRINTING OF MANUAL

PAGE 1
CHANGE THE PART NUMBER OF THE RED/BLACK TEST CORD TO 151 00051 00

8/30/93(CN 3034)
REV. _____

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INTRODUCTION

Congratulations on the purchase of your new RYCOM Cable Locator. The RYCOM Path Finder and Path Finder II cable locators are used to detect buried power cables, CATV cables, gas and water pipes, sewer lines, telephone cables, and fiber optic cables.

The Path Finder Transmitters apply a tracing signal onto a cable or pipe. The Receiver detects the tracing signal. You can locate the path of a buried pipe or cable by following the tracing signal.

The Path Finder and Path Finder II include:

	Path Finder	Path Finder II
Transmitter Unit	001-00104-00	001-00104-01
Receiver Unit	001-00105-00	001-00105-01
Red/Black Test Cord	151-00001-00	151-00001-00
RYCOM Ground Rod	211-00006-01	211-00006-01
User's Manual	030-00048-00	030-00048-00
8 AA-size Batteries		
8 D-size Batteries		
Optional: Flexicoupler		120-00166-00

MAKE-READY FOR USE

Unpack your Path Finder or Path Finder II locator. Make sure there is no shipping damage, and all the parts are included.

Remove the Receiver Path Finder from the case, and turn it face-down. Locate the battery compartment on the back of the Receiver. Install the eight AA-size batteries as marked on the case.

The Transmitter battery compartment is located beneath the Receiver storage well, in the bottom of the Pathfinder case. Install the eight D-size Transmitter batteries as marked on the case.

Path Finder
Low Battery
OFF
815
RYCOM
Made in USA
METER
LOW-BATTERY Indicator
SELECTOR Switch
SENSITIVITY Reference Mark
SENSITIVITY ADJUSTMENT
BUBBLE LEVEL
SIGHTING RIB
Path Finder II
Low Battery
OFF
815
82K
RYCOM
Made in USA

SER NO
PathFinder
ACTIVATE TRANSMITTER BY INSERTING PLUG
815 Hz
OUTPUT
ON
RYCOM
Made in USA
SER NO
Path Finder II
PLACE ARROWS ALONG CABLE PATH FOR INDUCTIVE MODE
815 Hz
82 KHz
OFF
DIRECT CONNECT
ON
RYCOM
Made in USA
ALIGNMENT ARROWS
SELECTOR Switch
DIRECT CONNECT Jack
OUTPUT/815HZ Jack
POWER-ON Indicator

Choose the heading below that matches your job, then pick the locating method. The methods under each heading are listed in order of preference. The first method is easiest, and usually gives the best results. The second method listed is next best, and so on. After selecting the locating method, turn to the page that tells how to connect the equipment.

ELECTRICAL CABLE AND CABLE TV (CATV)
- Multiple Grounded Circuit 5
- Flexicoupler (Path Finder II only) 7
- Inductive Connection (Path Finder II only).....8
- Direct Connection.....9

GAS AND WATER PIPE
- Continuously Grounded Circuit 11
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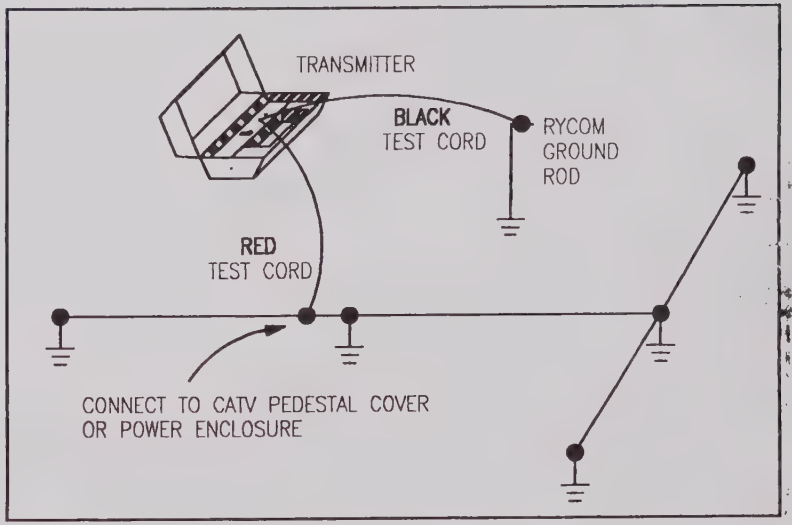
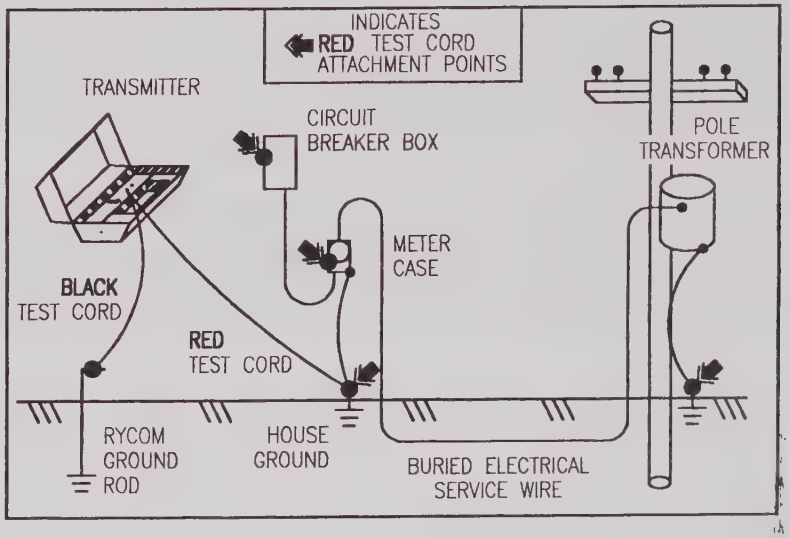
- Telephone Direct Shield Connection 13

NOTE: The Flexicoupler and Inductive Connection methods require using the 82 KHz high frequency setting, available on the Path Finder II model only.



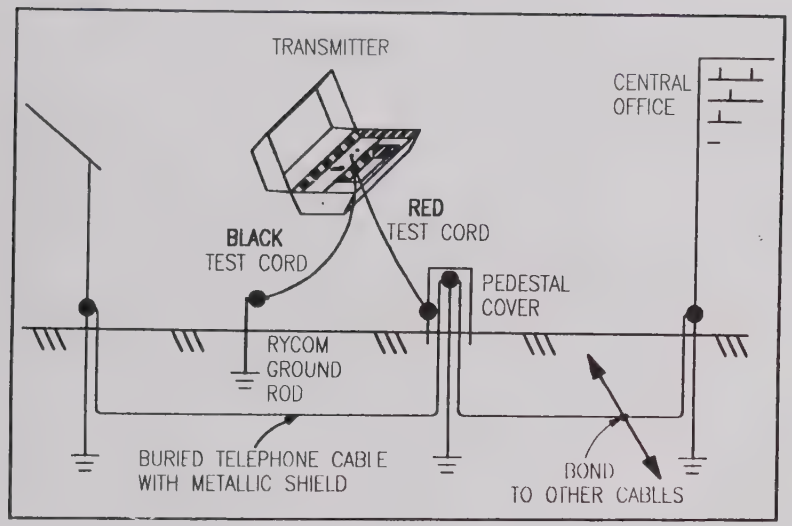
This method uses the existing ground points that are already exposed and available to you. It is not necessary to disconnect the service. The range of operation is up to one-half mile.



(over)

MULTIPLE GROUNDED CIRCUIT

(continued)



Connect the RED Test Cord to an existing ground point. Place the RYCOM Ground Rod approximately 10 feet from this point, at an angle of 90 degrees to the buried cable or pipe. Push the RYCOM Ground Rod into the ground eight to ten inches. Connect the BLACK Test Cord to the RYCOM Ground Rod.

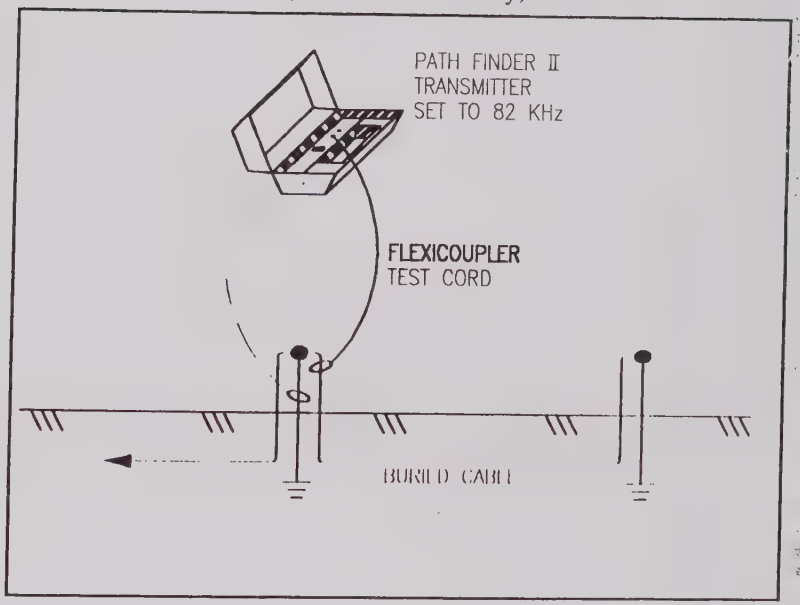
Path Finder: Plug the RED/BLACK Test Cord into the OUTPUT/815 Hz jack. The ON indicator light will start blinking.

Path Finder II: Plug the RED/BLACK Test Cord into the DIRECT CONNECT jack. Set the 815 Hz/OFF/82 KHz Switch to the 815 Hz position. The ON indicator will start blinking.

Turn to page 15 to begin locating the cable or pipe.

FLEXICOUPLER CONNECTION

(Path Finder II only)



The optional Flexicoupler is very easy to use, and services do not have to be interrupted. The operating range is shorter than for direct connection methods. The tracing signal can be affected by neighboring cables and pipes. Neither the RED/BLACK Test Cord nor the RYCOM Ground Rod are needed for this method.

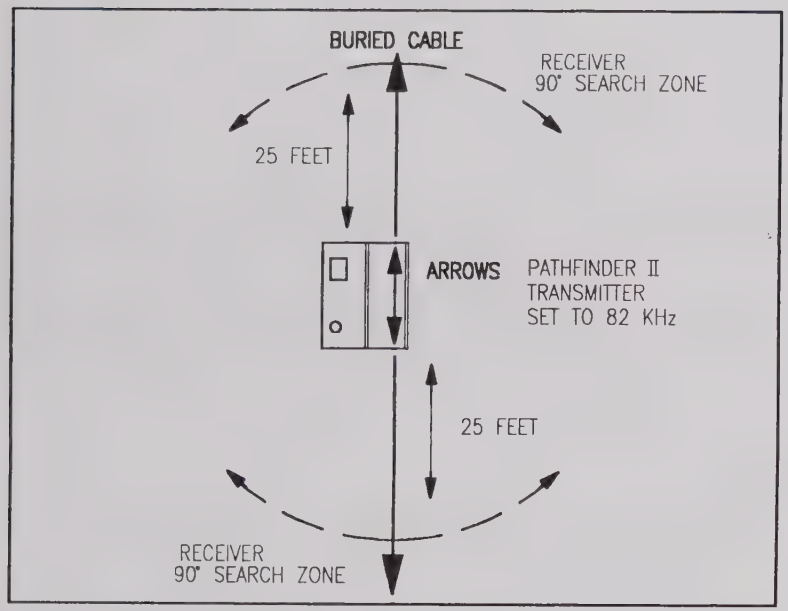
Loop the Flexicoupler around the cable and connect the two ends. It is important to connect the Flexicoupler around the cable you want to trace, as shown above. Connecting it around a commonly-bonded cable (dashed line in the figure), will cause the tracing signal to be weaker. The range will be shorter, and you may have trouble telling one cable from another.

Plug the Flexicoupler Test Cord into the DIRECT CONNECT jack. Set the 815 Hz/OFF/82 KHz Switch to the 82 KHz position. The ON indicator will start blinking.

Turn to page 15 to begin locating the pipe or cable.

INDUCTIVE CONNECTION

(Path Finder II only)



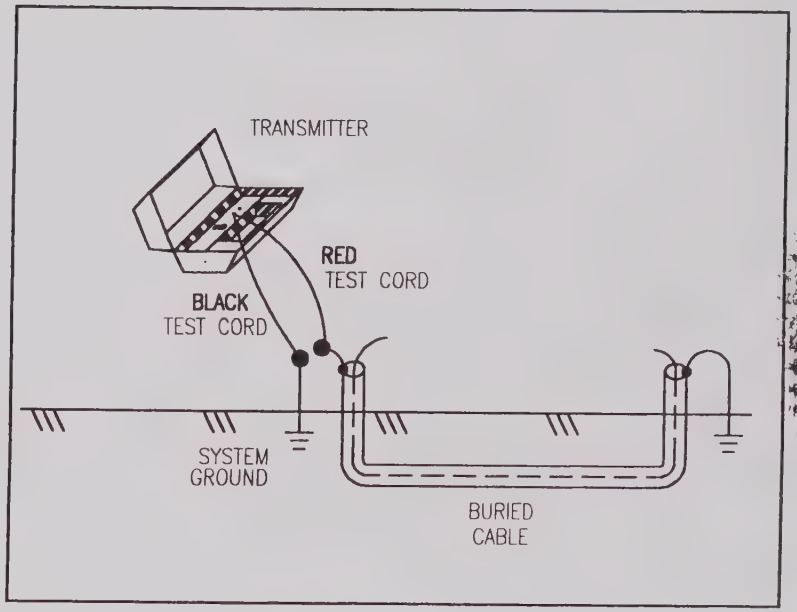
This method is convenient to use, and services are not interrupted. No Test Cords or connections are needed. The cable or pipe must have good insulation or non-conductive coating, or the operating range will be very short.

Place the Transmitter on the ground, as close as possible to the path of the cable or pipe. Align the ARROWS on the Transmitter Control Panel with the cable or pipe. Set the 815 Hz/OFF/82 KHz Switch to the 82 KHz position. The ON indicator will start blinking.

Start tracing the path with the Receiver 25 feet from the Transmitter. Search in the 90 degree zone as shown above. Locate the cable or pipe, and follow the path. If the signal becomes weak, move the Transmitter to a point 25 feet behind the last strong signal, and continue searching.

Turn to page 15 to begin locating the cable or pipe.

DIRECT CONNECTION



This method is very reliable and free of interference. The RYCOM Ground Rod is not needed. The range of operation is up to 15 miles. Utility services must be interrupted. This method is restricted to qualified employees of the service.

Disconnect the cable shield or neutral wire. Connect the RED Test Cord to the cable shield or neutral wire. Connect the BLACK Test Cord to the system ground, where the cable shield or neutral wire was previously connected.

(over)

DIRECT CONNECTION
(continued)

Path Finder: Plug the RED/BLACK Test Cord into the OUTPUT/815 Hz jack. The ON indicator will start blinking.

Path Finder II: Plug the RED/BLACK Test Cord into the DIRECT CONNECT jack. Set the 815 Hz/OFF/82 KHz Switch to the 815 Hz position. The ON indicator light will start blinking.

NOTES ON SELECTING THE TRACING SIGNAL
(If using the Path Finder II)

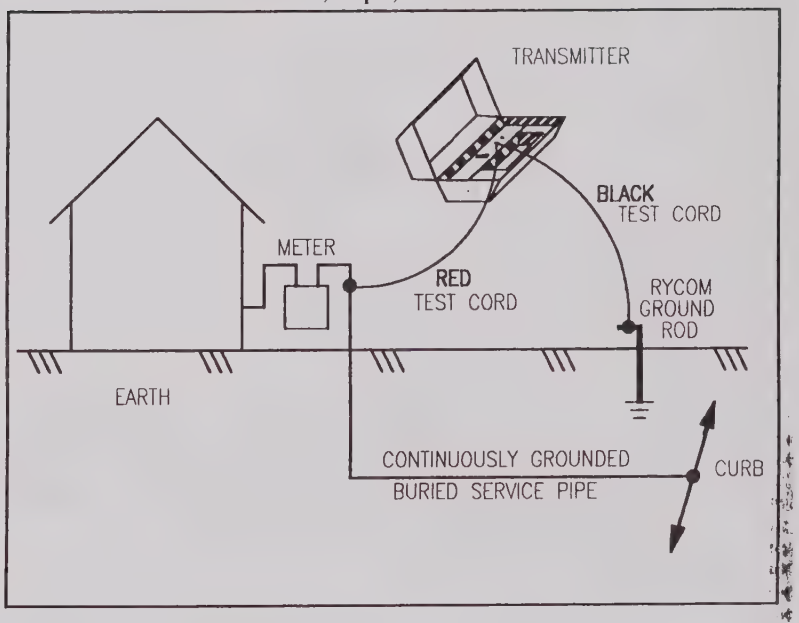
The 815 Hz and 82KHz signals each have their advantages. Use them in combination for the highest confidence in locating the path. Begin by using the 815 Hz signal, and continue as long as you are confident in the results. If the signal suddenly becomes very weak, disappears, or takes an unexpected turn, change to the 82 KHz signal to verify your results.

The 815 Hz signal is usually preferred to the 82 KHz signal, because it is much less susceptible to locating errors caused by adjacent cables or pipes. The locating range is also much longer than for the 82 KHz signal. The 815 Hz signal will not "jump" disconnected shield bonds or insulated pipe bushings, so you will have to inspect and correct these problems as you go.

The 82 KHz feature on the Path Finder II is sometimes better than the 815 Hz frequency for locating sharp corners in cables or pipes. The 82 KHz signal is also better for "jumping" disconnected shield bonds or grounds, or operating near concrete reinforcing bar. Sudden changes in the tracing signal may indicate one of these characteristics. The locating range is quite short for this signal, however, so the Transmitter must be repositioned more often during the tracing operation.

Turn to page 15 to begin locating the cable or pipe.

CONTINUOUSLY GROUNDED CIRCUI
Cable, Pipe, or Conduit



The locating range for bare uninsulated pipe is approximately 150 feet and may require frequent relocation of the Transmitter. If the locating range seems very short or unreliable, there may be an insulated bushing in the buried pipe. Try to bypass the insulated fitting by using a different connection point.

Connect the RED Test Cord to the shutoff valve wrench surfaces or union fittings near the gas or water meter. Place the RYCOM Ground Rod approximately 10 feet from this point, at an angle of approximately 90 degrees to the buried or pipe. Press the RYCOM Ground Rod eight to ten inches into the ground. Connect the BLACK Test Cord to the RYCOM Ground Rod.

(over)

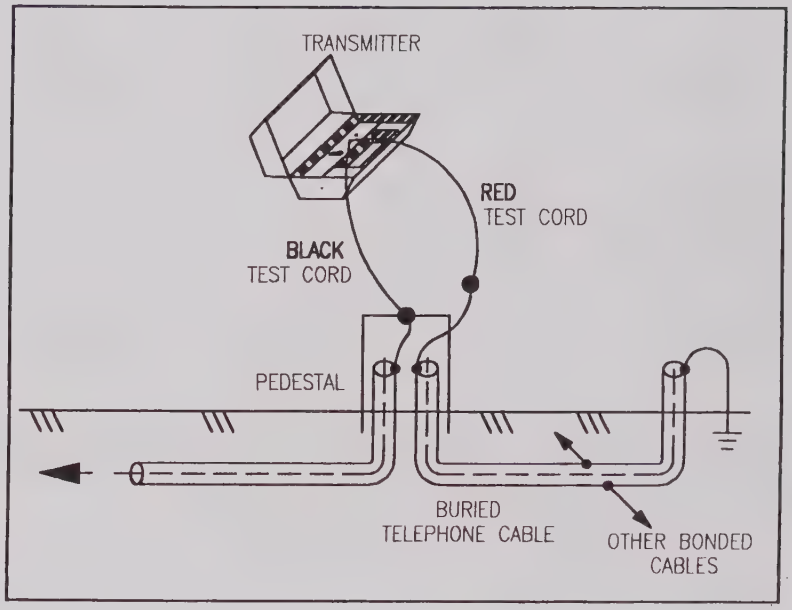
CONTINUOUSLY GROUNDED CIRCUIT
(continued)

Path Finder: Plug the RED/BLACK Test Cord into the OUTPUT/815 Hz jack. The ON indicator will start blinking.

Path Finder II: Plug the RED/BLACK Test Cord into the DIRECT CONNECT jack. Set the 815 Hz/OFF/82 KHz Switch to the 815 Hz position. The ON indicator light will start blinking.

Turn to page 15 to begin locating the cable or pipe.

TELEPHONE DIRECT SHIELD CONNECTION



This method is preferred for telephone service, because there is usually a ground lug available for making connections so damage to the cable is unlikely. It provides good reliability and service is not interrupted. A service company employee is required to make the connections. Readings may be confusing if several cable shields are bonded together.

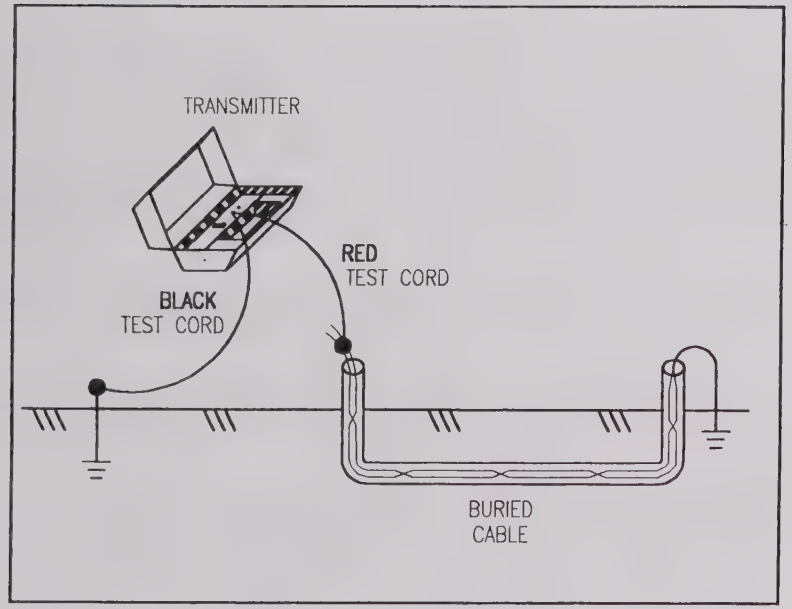
Disconnect the shield from the system ground. Connect the RED Test Cord to the cable shield. Connect the BLACK Test Cord to the Telephone pedestal or previous shield attachment point.

Path Finder: Plug the RED/BLACK Test Cord into the OUTPUT/815 Hz jack. The ON indicator will start blinking.

Path Finder II: Plug the RED/BLACK Test Cord into the DIRECT CONNECT jack. Set the 815 Hz/OFF/82 KHz Switch to the 815 Hz position. The ON indicator will start blinking.

Turn to page 15 to begin locating the cable or pipe.

TELEPHONE DIRECT PAIR CONNECTION



This method provides a very high quality path to the central office. It requires a service company employee to make the connections. Service is interrupted during the tracing operation. Locating errors due to the signal going the other direction or coupling into other cables are unlikely.

Select one of the wire pairs in the cable you want to trace. Connect the RED Test Cord to both wires in the pair. Do not use insulation piercing clips.

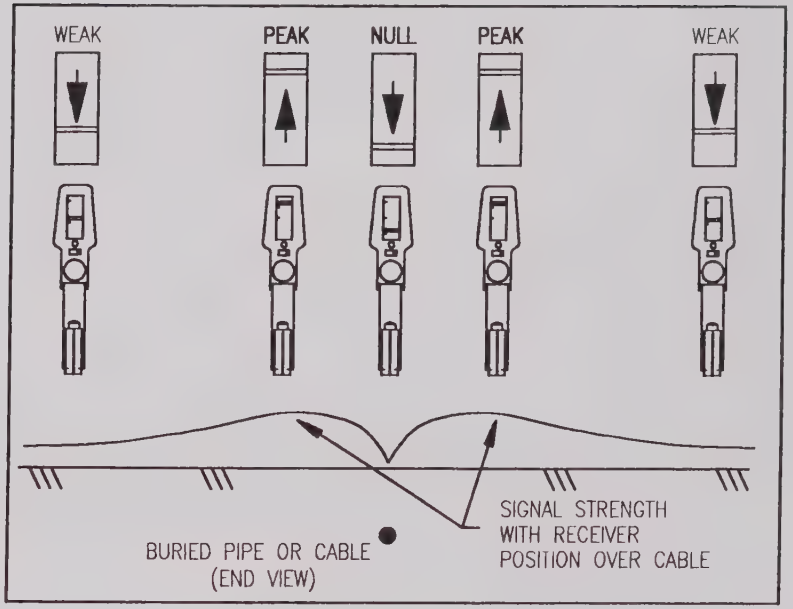
Connect the BLACK Test Cord to the system ground at any convenient point.

Path Finder: Plug the RED/BLACK Test Cord into the OUTPUT/815 Hz jack. The ON indicator will start blinking.

Path Finder II: Plug the RED/BLACK Test Cord into the DIRECT CONNECT jack. Set the 815 Hz/OFF/82 KHz Switch to the 815 Hz position. The ON indicator will start blinking.

Turn to page 15 to begin locating the cable or pipe.

LOCATING THE CABLE OR PIPE



Make sure the Transmitter is connected and turned on. Move about 15 feet away from the Transmitter, along the path. (Move about 25 feet for the INDUCTIVE search method, used with the Path Finder II only.)

Hold the Receiver so that the BUBBLE LEVEL is approximately centered, and you can see the METER and controls easily. Turn the Receiver SELECTOR switch to the 815 Hz position. If you are using the Path Finder II, make sure both the Receiver and Transmitter SELECTOR are set for the same frequency (either 815 Hz or 82 KHz). Adjust the SENSITIVITY control for a METER and audio response.

(over)

LOCATING THE CABLE OR PIPE
(continued)

Keep the BUBBLE LEVEL approximately centered. Swing the Receiver across the path. When the Receiver is directly above the cable or pipe, a NULL (lowest METER reading, and loss of the audio tone) will occur. When you swing the Receiver to the left or right of the NULL point, the meter reading will rise to a maximum point (PEAK), and the audio tone will resume. When the Receiver is swung beyond the PEAK, the METER reading will begin to fade and the audio tone will stop.

Move the Receiver to a PEAK position. Adjust the SENSITIVITY knob until the METER reads 6 to 9.

Trace the path by walking away from the Transmitter at a moderate pace. Swing the Receiver left and right as you walk, following the NULL indications.

When you trace the path, the PEAK meter reading may slowly fade as you move away from the Transmitter. Readjust the SENSITIVITY control to maintain a PEAK meter reading of 6 to 9. If the PEAK meter reading suddenly changes in level (higher or lower), you may have found:

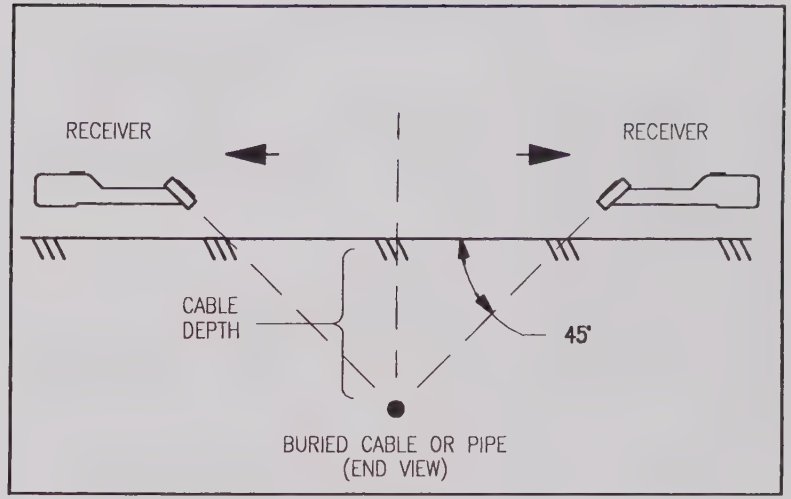
a) a junction where the signal divides and goes several directions.
b) a break in the cable or shield.
c) a change in depth of the cable or pipe.
d) an insulated pipe fitting.

If you can no longer trace the path, even with the SENSITIVITY control set to maximum, connect the Transmitter to the far end of the path, and trace back.

To precisely locate the Path, position the Receiver over the cable. Adjust the Receiver SENSITIVITY control so the signal NULL is just below 5 on the METER. Look down the SIGHTING RIB and mark the path. Keep the bubble-level centered for the most accuracy. Mark the straight sections of the path every few feet. Mark sharp curves, loops, and cable bundles every few inches.

Sharp changes in the path cause the Receiver NULL and PEAK indications to behave differently than when tracing a straight path. Practice on a path that you know has turns and laterals in it, so that you will recognize them.

DEPTH MEASUREMENTS
45 Degree Angle Method



Move to the spot where you want to measure depth. Stay at least 15 feet away from the Transmitter. Swing the Receiver across the path until you locate the NULL. Adjust the SENSITIVITY for a meter NULL reading of just below 5. Mark the path on the ground as precisely as possible.

Lay the Receiver on the ground with the meter facing up. Place the heel of the Receiver on the path, with the case at a 90 degree angle to the path. The METER will not indicate a NULL at this time, but do not readjust the SENSITIVITY control.

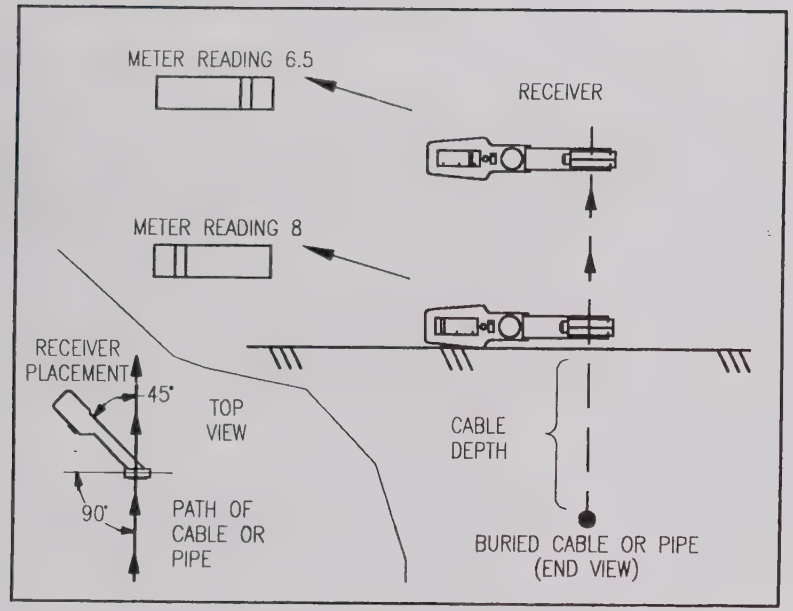
Move the Receiver slowly away from the path at a 90 degree angle until you find a new NULL. Mark this point. The distance between the Receiver and the cable path is the depth of the pipe or cable.

A false location can be caused by near-by buried metallic objects, such as a second cable or pipe, sewer, fence, or railroad track. Confirm your depth measurement by repeating the above steps on the opposite side of the pipe or cable.

A difference of more than 5 inches in depth measurements indicates additional buried cables, pipes, or other objects may be present.

DEPTH MEASUREMENTS

Straight Lift Method



Move to the spot where you want to measure depth. Stay at least 15 feet away from the Transmitter. Place the Receiver on its side on the ground. The Receiver body must be over the buried cable or pipe, and at a 45 degree angle to the path.

Without moving the Receiver, adjust the SENSITIVITY for a METER reading of 8.

Lift the Receiver straight up without twisting, turning, or drifting to the left or right of the path. Lift the Receiver until a new meter reading of 6.5 is found. The height of the Receiver above the ground is the depth of the cable.

PRODUCT SPECIFICATIONS

Receiver:

Operating Frequency:	815 Hz
*82.315 KHZ	
Antenna mode:	Null responding vertical coil
Operating temperature:	-4F to +133F
Battery type:	Eight AA-size alkaline cells
Battery life:	120 hours
	*100 hours
Dimensions:	13" long
	3" wide
	3" high
Weight:	1 lb 4 oz.
	*1 lb 6 oz.

Transmitter:

Operating Frequencies:	815 Hz
	*82.315 KHz
Output power:	
815 Hz	100mW –
*82.315 KHz	
directly coupled	100mW
inductively coupled	110mW
Battery type:	eight D-size alkaline cells
Battery life:	150 hours
Operating temperature:	-4F to +133F
Dimensions:	17" long
	7.5" wide
	6.5" high
Weight:	6 lbs 3 oz.

* indicates Path Finder II

FACTORY SERVICE

The RYCOM Model 8840 Path Finder and 8850 Path Finder II locators were designed for dependable operation without periodic adjustment or calibration. If, however, your Path Finder is not working properly, return it to the factory for repair. Send it prepaid to:

RYCOM Instruments Inc.
9351 East 59th Street
Raytown MO 64133 U.S.A.
Telephone: 816-353-2100
or
1-800-851-7347
FAX: 816-353-5050

We will repair and ship the instrument back within 10 working days, or advise you if the instrument is unrepairable.

Note: There is a minimum charge for repair and handling.

When shipping your Path Finder or Path Finder II for service, be sure to include:

a) The name, address, and phone number of your Contact.
b) A brief description of the trouble.
c) The return shipping address and department mail address, along with any special shipping instructions.

Packing Instructions: Remove all batteries, and place the Receiver in the Transmitter case. Use the original shipping carton, or equivalent sturdy container. Add packing material around all sides of the unit. Seal the shipping container with strong tape. Mark the shipping container:

FRAGILE ELECTRONIC EQUIPMENT.

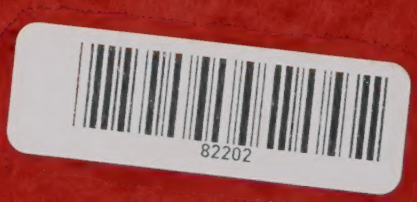
WARRANTY

This instrument is under warranty for one year from date of delivery against defects in material and workmanship (EXCEPTION -- BATTERY). We will repair or replace products that prove to be defective during the warranty period.

This warranty is void if, after having received the instrument in good condition, it is subjected to abuse, unauthorized alteration or casual repair.

NO OTHER WARRANTY IS EXPRESS OR IMPLIED. THE WARRANTY DESCRIBED IN THIS PARAGRAPH SHALL BE IN LIEU OF ANY OTHER WARRANTY, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WE ARE NOT LIABLE FOR CONSEQUENTIAL DAMAGES.

ACCO USA
WAUKEGAN, ILLINOIS 60090
MADE IN USA
50505 25078
RED/ROUGE/ROJO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